REMARKS

Claims 1, 3-9, 11, 12 and 14-24 are pending in the application. Claims 15-18 are withdrawn.

The office action identifies that claims 4 and 12 contain allowable subject matter if rewritten to overcome a rejection under 35 U.S.C. 112. These claims have been rewritten in independent form.

The Examiner objected to the Abstract. The Abstract has been amended herein to address the Examiner's position. No new matter has been added.

The Examiner approved the proposed drawing correction included with the prior response. A sheet of corrected drawings is attached hereto incorporating the approved changes. No new matter has been added.

ARGUMENTS

Claims 1, 3-9, 11, 12, 14 and 21 are rejected under 35 U.S.C. 112 as indefinite. The claims have been amended to address the Examiner's position. The applicant requests that the rejection of claims 1, 3-9, 11, 12, 14 and 21 under 35 U.S.C. 112 be withdrawn.

Claims 1, 3, 5-9, 11, 14 and 19-24 are rejected under 35 U.S.C. 102(e) as anticipated by U.S. Pat. No. 6,330,153 (Ketonen). In making this rejection, the Examiner asserted on page 7 as a general principle that "little or no patentable weight" is accorded to limitations including "adapted to" or "adapted for." This assertion was repeated as part of each of the prior art rejections discussed below. This is erroneous. Limitations based on "adapted to" are capable of patentably distinguishing a claimed invention. See, *e.g.*, In re Venezia, 189 USPQ 149 (CCPA 1976) in which the court stated that "adapted to" limitations "serve to precisely define present structural attributes" of a claimed invention. Accordingly, the Examiner must address the claimed limitations with a prior art showing for a proper rejection. The Examiner is respectfully directed to Section 2173.05(g) of the Manual of Patent Examining Procedure (MPEP) in which the acceptability of limitations based on "adapted to" is discussed. In this section, examiners are directed that "[a] functional limitation must be evaluated and

considered, ***just like any other limitation of the claim***, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used."

Claim 1, as amended, recites a heat transfer apparatus for rheological testing comprising a receptacle for receiving a test sample and a heat conveying member. The receptacle for the test sample of claim 1 is located in an interior defined by the heat conveying member such that the receptacle is substantially surrounded by the heat conveying member. The heat conveying member of claim 1 includes at least first and second internal passages, an inlet, an outlet, a passage splitter and a passage union.

Each of the first and second internal passages defines a substantially complete loop about the interior of the heat conveying member and the receptacle therein. The passage splitter and the first and second internal passages of claim 1 are arranged for counter-flow circulation in which a flow of fluid is directed in the first and second internal passages through the heat conveying member in clockwise and counterclockwise directions.

Ketonen discloses a heat sink (10) for cooling an electronic device having a heat sink base (12) and a finned heat sink (14). An airflow channel (28) is defined between surfaces of the heat sink base and the finned heat sink. The channel (28) includes an inlet (30) and an outlet (32) located at opposite sides of the heat sink. The channel (28) branches into two channels between the inlet (28) and the outlet (30).

The Examiner asserts that either one of a cover (56; Fig. 3) or a top surface (16; Fig. 2) of the heat sink (10) is comparable to the required receptacle. Neither of these elements, however, is located <u>within</u> an interior defined by the heat sink such that each of the branched channel portions (28) extends <u>around</u> the interior in a substantially complete loop for counter-flow circulation. Instead, as shown in Figure 1A, the inlet (30) and outlet (32) are located at opposite ends of the heat sink (10), which is planar in configuration. Thus, as shown by the arrows, the airflow is divided adjacent to one end of the heat sink and is reunited adjacent the other end in a parallel flow arrangement in which the airflow is directed in the channel branches in the same direction through the heat sink.

For the foregoing reasons, Ketonen fails to show each feature of claim 1. Claim 1, therefore, is not anticipated by Ketonen.

Each of claims 3 and 5-8 depends from claim 1 and is, therefore not anticipated by Ketonen for the same reasons as claim 1. Claim 3 recites that the heat conveying member is formed from a plurality of heat sinks and that the inlet and outlet are located adjacent each other on one of the plurality of heat sinks. As shown in Figure 1A of Ketonen, the inlet (30) and outlet (32) are located at opposite ends of the heat sink (10). For this additional reason, therefore, in addition to the above reasons for claim 1, claim 3 is not anticipated by Ketonen.

Each of claims 6-8 recites a heat exchanging element disposed in heat transfer relation to the receptacle and to the heat conveying member. Each of claims 7 and 8 further recites that the heat exchanging element is a thermoelectric module responsive to electric current to transfer heat through the module from a first side of the module to an opposite second side of the module.

Ketonoen does not include a thermoelectric module responsive to electric current for heat transfer through the module between opposite sides of the module. The Examiner has taken the position that power transistors (44, 54) are comparable to a heat exchanging element, and more particularly a thermoelectric module with respect to claims 7 and 8. This is erroneous. As described in Ketonen at col. 4, lines 20-32, power transistors generate heat when operated and are cooled by the airflow channels (28) of the sink (10). Power transistors are not thermoelectric modules. Thermoelectric modules, also known as Peltier elements, are <u>well</u> known in the art. Thus, a person of ordinary skill in the art would <u>not</u> consider a power transistor to be the same as a Peltier element. It is respectfully submitted that the Examiner's assertion of such is incorrect.

For this additional reason, therefore, in addition to the above reasons for claim 1, Ketonen does not anticipate claims 6-8.

Claim 9 recites a cold cranking simulator comprising a sample receptacle, at least one heat exchanging element in heat transfer relation to the receptacle and a heat conveying member in heat transfer relation to the heat exchanging element. The heat exchanging element of claim 9 is responsive to electric current to transfer heat to or from the receptacle. The receptacle and the at least one heat exchanging element are located within an interior defined by the heat conveying member such that they are substantially surrounded by it.

The heat conveying member of claim 9 includes spaced apart first and second internal passages, a flow splitter and a passage union each connected to the first and second internal passages and an inlet and outlet respectively connected to the splitter and union. Each of the internal passages extends substantially completely around the interior of the heat conveying member. The passage splitter and the internal passages are arranged for counter-flow circulation in which fluid is directed through the first and second internal passages in clockwise and counter-clockwise directions respectively.

The Examiner asserted that the power transistors (44, 54) of Ketonen are heat exchanging elements. Again, this assertion is erroneous. As discussed above, the transistors merely <u>generate</u> heat that is conveyed away by the airflow channels (28) of the heat sink (10). They are by no means comparable to heat exchangers as that term is understood in the art.

Also, as discussed above for claim 1, neither of the purported "receptacles" of Ketonen is located within an interior defined by heat sink with each of the branched channel portions (28) extending thereabout in a substantially complete loop for counter-flow circulation. Instead, the inlet (30) and outlet (32) are located at opposite ends of the heat sink (10) for parallel flow in which airflow is directed in the channel branches in the same direction through the heat sink.

For the foregoing reasons, Ketonen fails to show each feature of claim 9. Claim 9, therefore, is not anticipated by Ketonen. Each of claims 11 and 14 depends from claim 9 and is, therefore not anticipated by Ketonen for the same reasons as claim 9.

Claim 14 further recites a temperature control system including a temperature probe. The control system of claim 14 responds to a signal generated by the probe representing a monitored temperature and controls the electric current that is directed to the heat exchanging element. Ketonen does not show or imply a temperature control system for controlling electric current directed to the purported heat exchanging element (*i.e.*, the power transistor (44)) in response to monitored temperature.

For this additional reason, therefore, in addition to the above reasons for claim 9, claim 14 is not anticipated by Ketonen.

Claim 19 recites a heat transfer apparatus comprising a heat transfer housing having a wall and a bottom, the wall having an inside surface defining an cavity. The wall of claim 19 includes at least one electrical heat transfer device for controlling heat transfer from the inside surface of the wall. The wall of claim 19 further includes a inlet port, an outlet port, and first and second channels connected to the inlet and outlet ports. Each of the channels defines a substantially complete loop about the cavity of the housing. This arrangement provides for a counter-flow circulation in which flow through the housing in the first and second channels is in opposite directions.

The Examiner asserts that the power transistors (44, 54) of Ketonen are comparable to electrical heat transfer devices. As discussed above, the transistors merely generate heat and are not electrical heat transfer devices as required by claim 19. Also, as discussed above, Ketonen does not show or imply that each of the channels defines a substantially complete loop about an interior cavity for counter-flow circulation in the channels.

For the foregoing reasons, Ketonen fails to show each feature of claim 19. Claim 19, therefore, is not anticipated by Ketonen. Each of claims 20 and 21 depends from claim 19 and is, therefore, not anticipated by Ketonen for the same reasons as claim 19.

Claim 22 recites a heat transfer apparatus comprising a heat transfer housing having four wall sections and a bottom, the wall sections having an inner surface defining a cavity. The apparatus of claim 22 further includes at least two thermal electrical units mounted in two of the wall sections each responsive to electric current for controlling heat transfer from the inside surface of the wall. The apparatus of claim 22 further includes an inlet port, an outlet port, and first and second channels connected to the inlet and outlet ports.

The heat sink (10) of Ketonen does not include a wall including four wall sections and an inner surface defining a cavity. Ketonen also does not include at least two thermal electrical units. As discussed above, the transistors merely generate heat and are not thermal transfer units responsive to electric current for controlling heat transfer from an adjacent element.

For the foregoing reasons, Ketonen fails to show each feature of claim 22. Claim 22, therefore, is not anticipated by Ketonen. Each of claims 23 and 24 depends from claim 22 and, therefore, is not anticipated by Ketonen for the same reasons as claim 22.

The applicant requests that the rejection of claims 1, 3, 5-9, 11, 14 and 19-24 as anticipated by Ketonen be withdrawn.

Claims 1, 3, 6-9 and 11 are rejected under 35 U.S.C. 102(b) as anticipated by U.S. Pat. No. 3,035,419 (Wigert). Again, claim 1 recites a heat transfer apparatus comprising a a receptacle and a heat conveying member, the receptacle located in an interior defined by the heat conveying member such that the receptacle is substantially surrounded by the heat conveying member. An inlet and an outlet connected to first and second internal passages are located adjacent each other on one side of the heat conveying member such that each of the first and second internal passages defines a substantially complete loop about the interior of the heat conveying member and the receptacle therein. This arrangement provides for counter-flow circulation in which a flow of fluid is respectively directed in the first and second internal passages through the heat conveying member in clockwise and counterclockwise directions.

Wigert discloses a refrigeration cooling device including an evaporator and a condenser (42; Fig. 6 and col. 5, lines 20-50). Vapor from three evaporators is collected in a upper receptacle (52) from separate "in" tubes (46, 48, 50). The vapor is directed downwardly from the upper receptacle in hollow members (54) through a finned radiator (44) causing the vapor to condense to liquid form and drop into a lower receptacle (56). The liquid is then directed from the lower receptacle in three "out" tubes. (58, 60, 62).

The Examiner asserted that the condenser (42) is comparable to the required heat conveying member and that an evaporator associated with the condenser (42) is comparable to the required receptacle. Referring to Figure 6, the associated evaporator (which is not seen) is not disposed in heat transfer relation with the condenser (42) within an interior defined by the condenser and, instead, is spaced from the condenser (42) and connected thereto by "in" tubes (46, 48, 50) and "out" tubes (58, 60, 62). It is noted that such an arrangement is dictated by what Wigert is, *i.e,* a refrigeration system in which the evaporator is located upstream from the condenser. Thus, a reconstruction of Wigert for a purported disclosure of the claimed invention would not be proper.

The Examiner also asserted that the upper and lower receptacles (52, 56) are respectively comparable to the required passage splitter and passage union and that the tubes (54)

are comparable to the required internal passages. The Examiner asserts that elements (20, 22) are respectively comparable to the required outlet and inlet. As shown in Figure 6, however, the inlet and outlet are located on opposite sides of the heat conveying member (*i.e.*, condenser (42)) instead of adjacent each other on one side as required by claim 1. Also, the passages (*i.e.*, tubes (54)) do not form substantially complete loops about an interior defined by the heat conveying member for counter-flow circulation in first and second passages in clockwise and counter-clockwise directions, respectively. Instead, Wigert provides a parallel flow arrangement in which fluid is directed in the same direction through the heat conveying member.

For the foregoing reasons, Wigert fails to show each feature of claim 1. Claim 1, therefore, is not anticipated by Wigert. Each of claims 3 and 6-8 depends from claim 1 and, therefore, is not anticipated by Wigert for the same reasons as claim 1.

As discussed above, each of claims 6-8 further recites a heat exchanging element disposed in heat transfer relation to the receptacle and to the heat conveying member. Each of claims 7 and 8 further recites that the heat exchanging element is a thermoelectric module responsive to electric current.

The Examiner asserts that a lamp (24) of Wigert is comparable to the required heat exchanging element of claims 6-8 and more particularly to the required thermoelectric module of claims 7 and 8. Lamp (24) is <u>not</u> a heat exchanging element and, more particularly, is not a thermoelectric module. Once again, the Examiner is interpreting claim language contrary to its understood meaning in the art. A lamp simply <u>produces</u> heat. It does not exchange heat, nor is it an equivalent to a thermoelectric module. Also, as shown in Figure 1, the lamp is located adjacent to the evaporator, which is not seen in Figure 6, and is therefore, not disposed in heat transfer relation to the heat conveying member (*i.e.*, the condenser (42)).

For these reasons, therefore, in addition to those above for claim 1, Wigert does not anticipate claims 6-8.

As discussed above, claim 9 recites a cold cranking simulator comprising a receptacle, at least one heat exchanging element and a heat conveying member. The heat exchanging element of claim 9 is responsive to electric current to transfer heat to or from the receptacle. The receptacle and heat exchanging element are located within an interior defined by

the heat conveying member. The heat conveying member includes an inlet and outlet located adjacent each other and first and second internal passages arranged such that each of the internal passages extends substantially completely around the interior of the heat conveying member for counter-flow circulation in which fluid is directed through the first and second internal passages in clockwise and counter-clockwise directions respectively.

As discussed above for claim 1, the evaporator associated with the heat conveying member (i.e., the condenser (42)) is not disposed in heat transfer relation with the heat conveying member within an interior defined thereby and, instead, is spaced from the heat conveying member and connected thereto by "in" tubes (46, 48, 50) and "out" tubes (58, 60, 62).

Also, as discussed above, the inlet and outlet of Wigert are located on opposite sides of the heat conveying member (*i.e.*, condenser (42)), and not adjacent each other. Also, the passages (*i.e.*, tubes (54)) do not form substantially complete loops about an interior defined by the heat conveying member for counter-flow circulation in first and second passages in clockwise and counter-clockwise directions, respectively.

For the foregoing reasons, Wigert fails to show each feature of claim 9. Claim 9, therefore, is not anticipated by Wigert. Claim 11 depends from claim 9 and, therefore, is not anticipated by Wigert for the same reasons as claim 9.

The applicants request that the rejection of claims 1, 3, 6-9 and 11 as anticipated by Wigert be withdrawn.

Claims 1 and 6-9 are rejected under 35 U.S.C. 102(b) as anticipated by U.S. Pat. No. 4,675,720 (Ikegame).

Ikegame discloses a tank (8) filled with an insulating gas and housing a valve assembly (10). The valve assembly (10) includes thyristor modules (5) having thyristor elements (1) and anode and cathode reactors (2) connected in series. A voltage dividing circuit having capacitors (3) and resistors (4) is connected in parallel with the thyristor elements (1). A supply pipe (14a) and a delivery pipe (14b) are connected to couplers (15) at opposite sides of the tank for respectively directing a coolant fluid to and from the tank. A set of branch pipes (16a, 16b) respectively direct the coolant to and from the thyristor modules (5) to cool the modules.

The Examiner asserted that the tank (8) and branch pipes (16a, 16b) of Ikegame are respectively comparable to the receptacle and heat conveying member of claim 1. The receptacle (i.e., tank (8)), however, is not located within an interior defined by the heat conveying member (i.e., the branch pipes (16a, 16b)).

The Examiner also asserted that the couplers (15) at opposite sides of the tank of Ikegame are comparable to the inlet and outlet required by claim 1. The couplers of Ikegame, however, are not located adjacent each other as required by claim 1.

The Examiner further asserted that the required internal passages are provided by the branch pipes (16a, 16b), which are also asserted as the heat conveying member as discussed above. The internal passages of Ikegame (i.e., the branch pipes), however, do not form substantially complete loops about an interior defined by the heat conveying member (i.e., also the branch pipes).

For the foregoing reasons, Ikegame fails to show each feature of claim 1. Claim 1, therefore, is not anticipated by Ikegame. Each of claims 6-8 depends from claim 1 and, therefore, is not anticipated by Ikegame for the same reasons as claim 1.

As discussed above, each of claims 6-8 further recites a heat exchanging element disposed in heat transfer relation to the receptacle and to the heat conveying member. Each of claims 7 and 8 further recites that the heat exchanging element is a thermoelectric module responsive to electric current.

The Examiner asserted that the thyristor modules (5) are comparable to the required heat exchangers, and more particularly to the thermoelectric module of claims 8 and 9.

As described by Ikegame at col. 2, lines 40-44, and shown in Figure 2, each thyristor module (5) includes a plurality of thyristor elements (1) and anode and cathode reactors (2) connected in series. A voltage dividing circuit of the module (5) includes capacitors (3) and resistors (4) connected in parallel with the thyristor elements (1).

The thyristor modules (5) of Ikegame are not heat exchanging elements and more particularly, the thyristor modules (5) of Ikegame are not thermoelectric modules.

For these reasons, therefore, in addition to those above for claim 1, Wigert does not anticipate claims 6-8.

Regarding claim 9, the receptacle of Ikegame (*i.e.*, the tank (8)) and the heat exchanging element (*i.e.*, the thyristor modules (5)) are not located within an interior defined by the heat conveying member (*i.e.*, the branch pipes (16a, 16b)).

Also, for the same reasons as claim 1, the internal passages of Ikegame (*i.e.*, the branch pipes (16a, 16b)) do not form substantially complete loops about an interior defined by the heat conveying member (*i.e.*, also the branch pipes).

For the foregoing reasons, Ikegame fails to show each feature of claim 9. Claim 9, therefore, is not anticipated by Ikegame.

The applicants request that the rejection of claims 1 and 6-9 as anticipated by Ikegame be withdrawn.

It is respectfully submitted that the application is in condition for allowance. If the Examiner believes that direct communication would advance prosecution, the Examiner is invited to telephone the undersigned.

Respectfully submitted,
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